

## GROUP 4 MAIN CONTROL VALVE

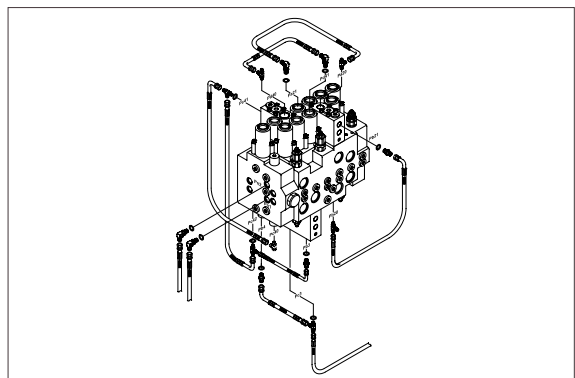
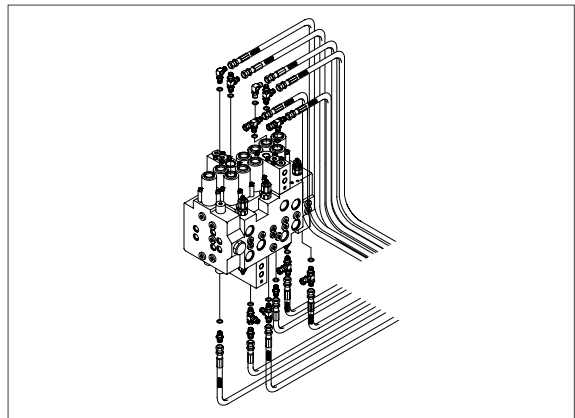
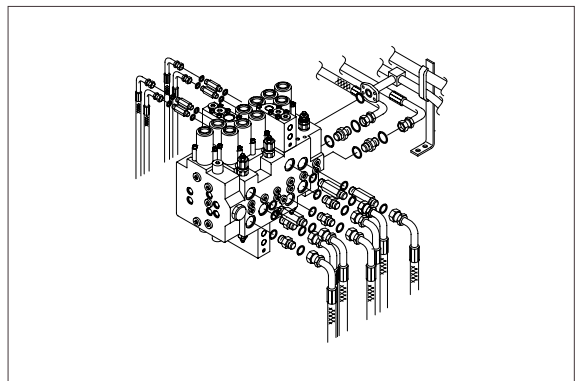
### 1. REMOVAL AND INSTALL OF MOTOR

#### 1) REMOVAL

- (1) Lower the work equipment to the ground and stop the engine.
- (2) Operate the control levers and pedals several times to release the remaining pressure in the hydraulic piping.
- (3) Loosen the breather slowly to release the pressure inside the hydraulic tank.  
**▲** Escaping fluid under pressure can penetrate the skin causing serious injury. When pipes and hoses are disconnected, the oil inside the piping will flow out, so catch it in oil pan.
- (4) Remove bolts and disconnect pipe.
- (5) Disconnect pilot line hoses.
- (6) Disconnect pilot piping.
- (7) Sling the control valve assembly and remove the control valve mounting bolt.  
· Weight : 80kg(180lb)
- (8) Remove the control valve assembly.  
When removing the control valve assembly, check that all the piping have been disconnected.

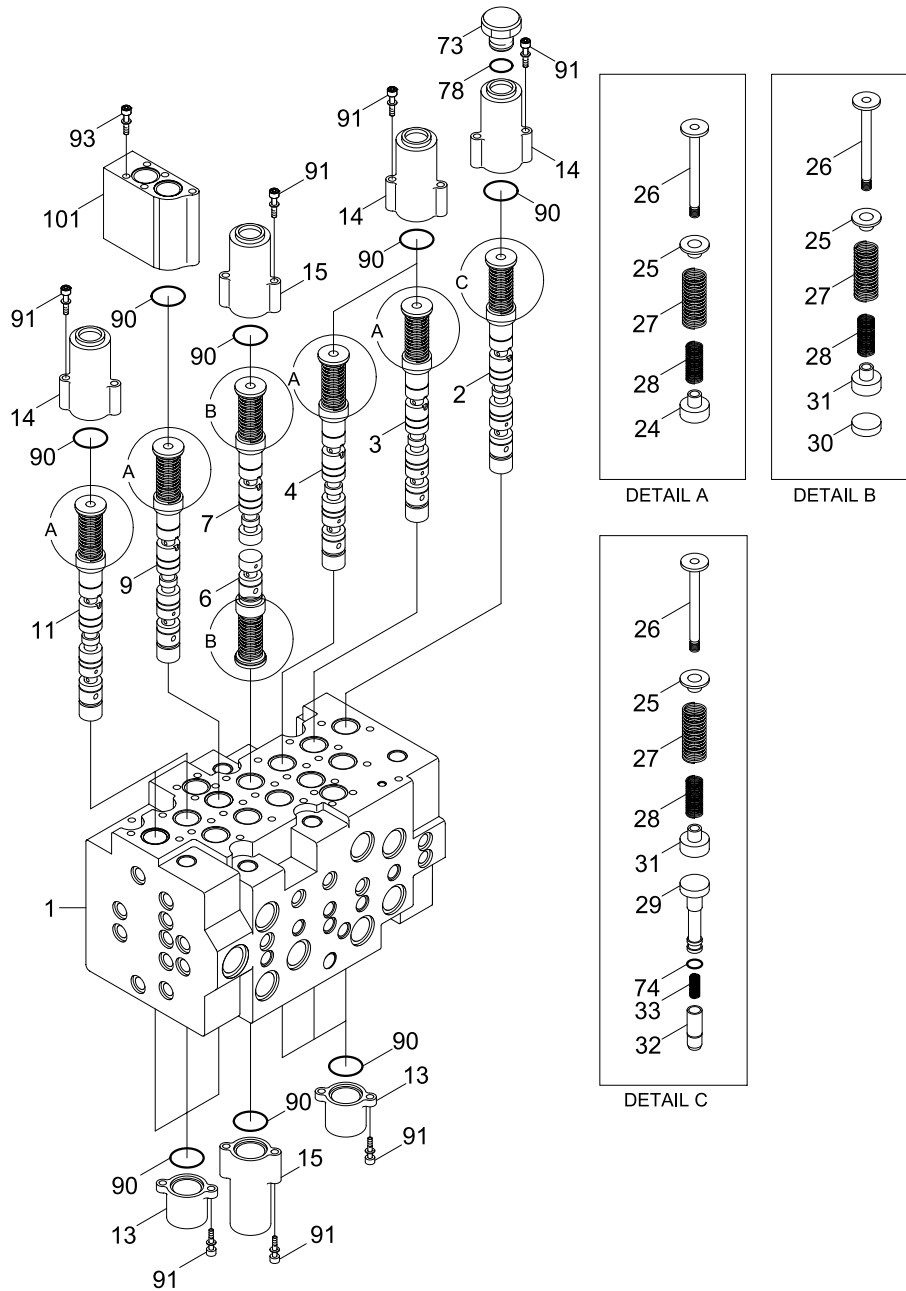
#### 2) INSTALL

- (1) Carry out installation in the reverse order to removal.
- (2) Bleed the air from below items.  
Cylinder(Boom, arm, bucket)  
Swing motor  
Travel motor  
See each item removal and install.
- (3) Confirm the hydraulic oil level and recheck the hydraulic oil leak or not.



# A. ALP165

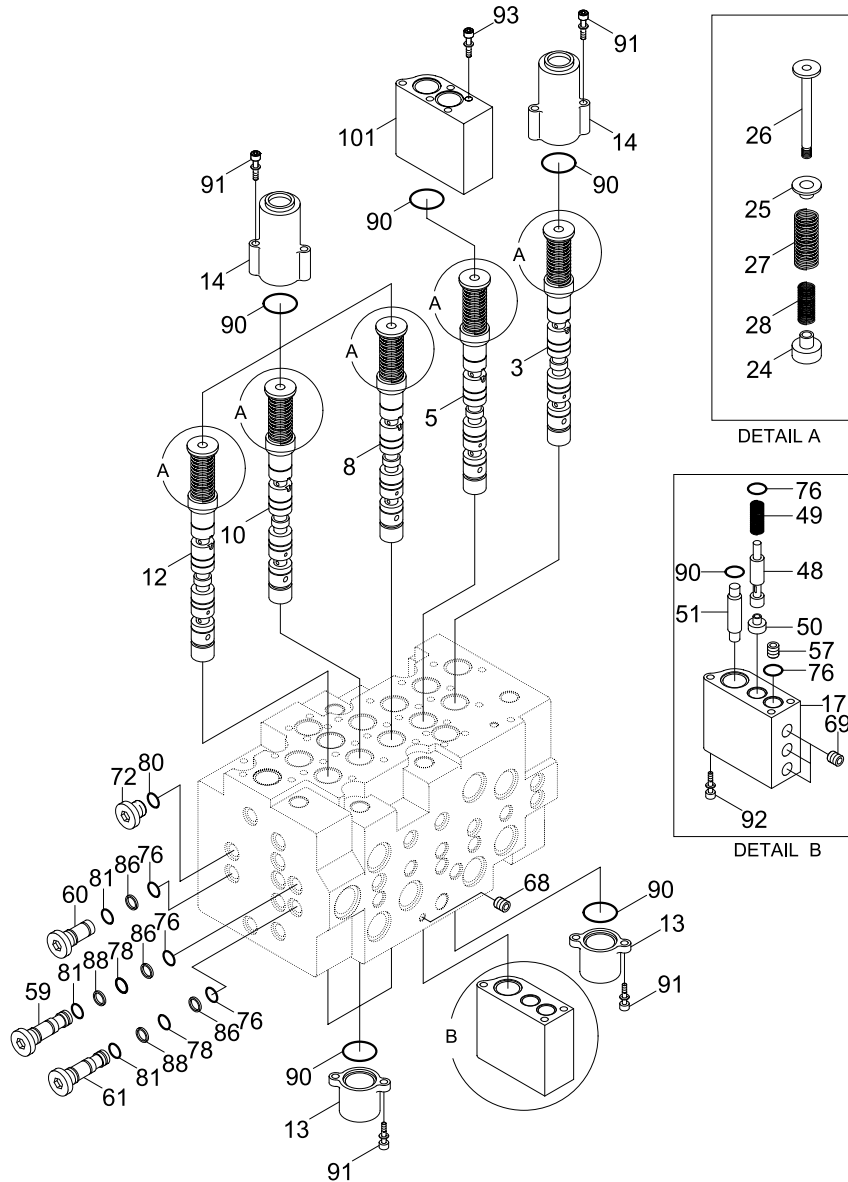
## 2. STRUCTURE(1/4)



- |    |             |    |               |     |                    |
|----|-------------|----|---------------|-----|--------------------|
| 1  | Body        | 14 | Cover-pilot   | 31  | Holder-spring      |
| 2  | Spool       | 15 | Cover-pilot   | 32  | Valve-check        |
| 3  | Spool       | 24 | Holder-spring | 33  | Spring-check valve |
| 4  | Spool       | 25 | Holder-spring | 73  | Plug               |
| 6  | Spool       | 26 | End-spool     | 74  | O-ring             |
| 7  | Spool       | 27 | Spring        | 78  | O-ring             |
| 9  | Spool       | 28 | Spring        | 90  | O-ring             |
| 11 | Spool       | 29 | Stopper       | 91  | Bolt-socket head   |
| 13 | Cover-pilot | 30 | Stopper       | 93  | Bolt-socket head   |
|    |             |    |               | 101 | Lock-valve         |

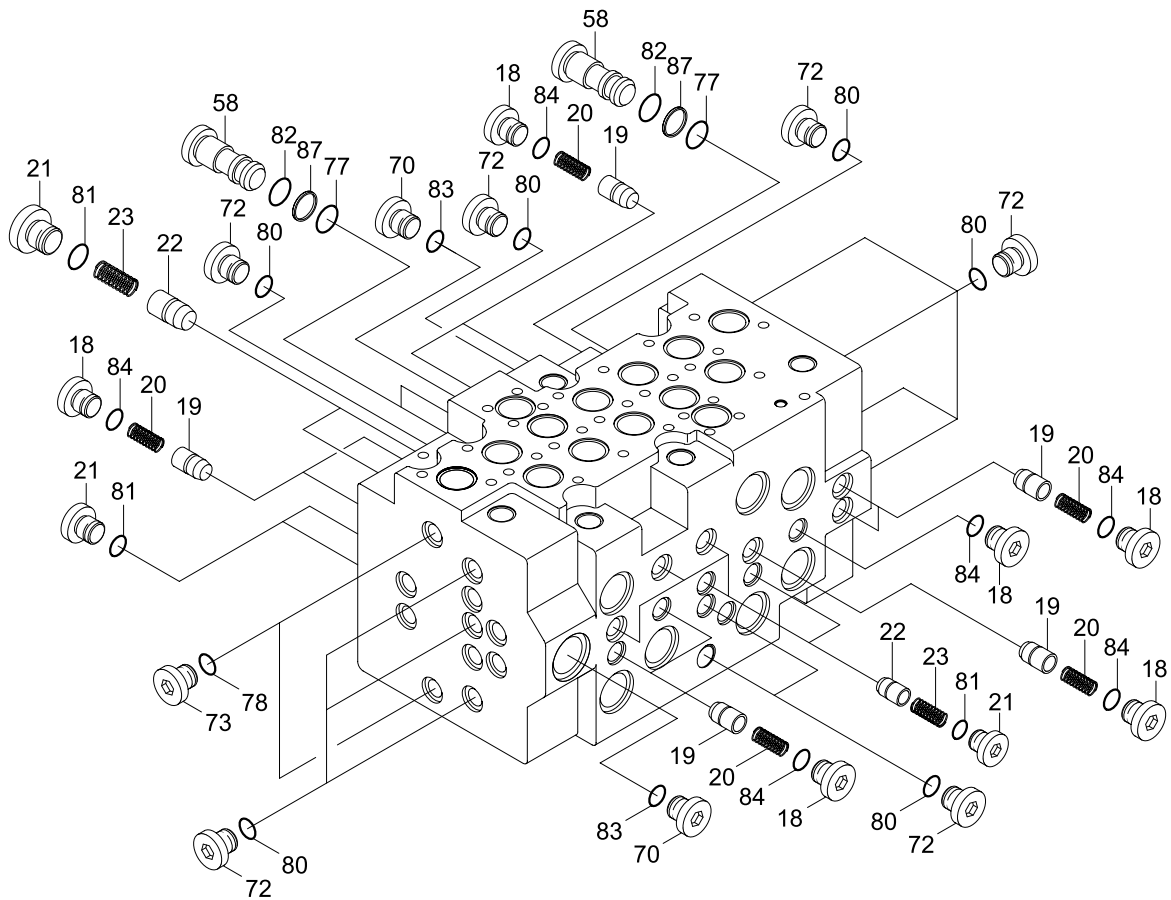
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# STRUCTURE(2/4)



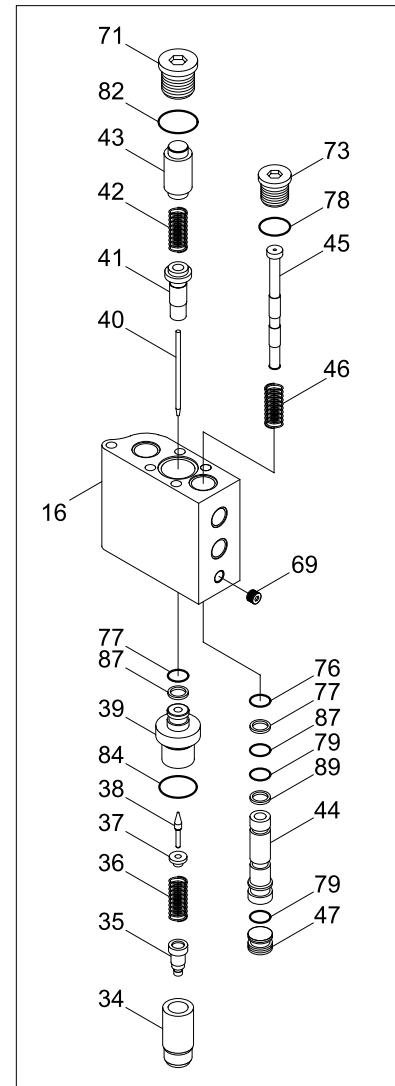
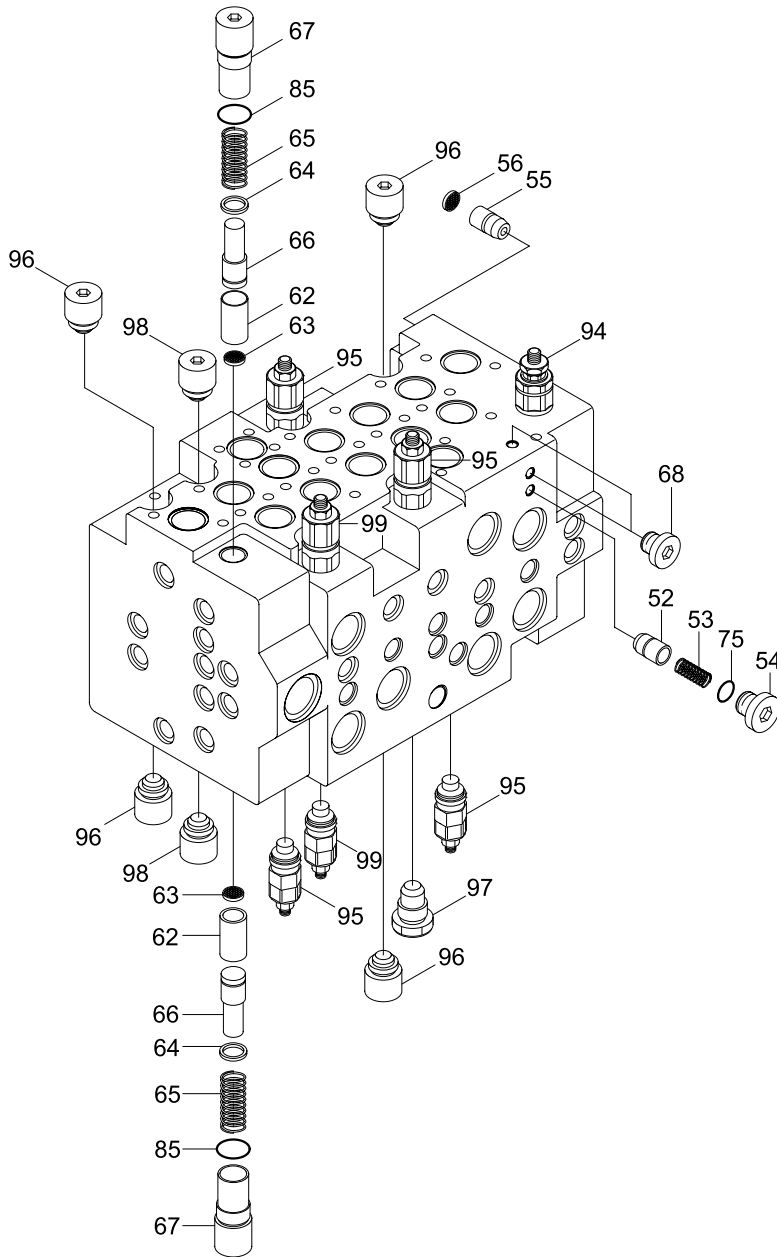
- |    |               |    |                  |     |                  |
|----|---------------|----|------------------|-----|------------------|
| 3  | Spool         | 27 | Spring           | 72  | Plug             |
| 5  | Spool         | 28 | Spring           | 76  | O-ring           |
| 8  | Spool         | 48 | Spool-selector   | 78  | O-ring           |
| 10 | Spool         | 49 | Spring           | 80  | O-ring           |
| 12 | Spool         | 50 | Stopper          | 81  | O-ring           |
| 13 | Cover-pilot   | 51 | Piston           | 86  | Back-up ring     |
| 14 | Cover-pilot   | 57 | Restrictor       | 88  | Back-up ring     |
| 17 | Cover-pilot   | 59 | Plug             | 90  | O-ring           |
| 24 | Holder-spring | 60 | Plug             | 91  | Bolt-socket head |
| 25 | Holder-spring | 61 | Restrictor       | 92  | Bolt-socket head |
| 26 | End-spool     | 68 | Plug-socket head | 93  | Bolt-socket head |
|    |               | 69 | Plug-socket head | 101 | Lock-valve       |

## STRUCTURE(3/4)



- |    |                    |    |        |    |              |
|----|--------------------|----|--------|----|--------------|
| 18 | Plug               | 58 | Plug   | 80 | O-ring       |
| 19 | Valve-check        | 70 | Plug   | 81 | O-ring       |
| 20 | Spring-check valve | 72 | Plug   | 82 | O-ring       |
| 21 | Plug               | 73 | Plug   | 83 | O-ring       |
| 22 | Valve-check        | 77 | O-ring | 84 | O-ring       |
| 23 | Spring-check valve | 78 | O-ring | 87 | Back-up ring |

# STRUCTURE(4/4)



DETAIL OF LOCK VALVE

- |    |                       |    |                    |    |                       |
|----|-----------------------|----|--------------------|----|-----------------------|
| 16 | Cover-pilot           | 52 | Valve-check        | 75 | O-ring                |
| 34 | Valve-lock            | 53 | Spring-check valve | 76 | O-ring                |
| 35 | Restrictor-lock valve | 54 | Plug               | 77 | O-ring                |
| 36 | Spring-lock valve     | 55 | Restrictor         | 78 | O-ring                |
| 37 | Holder-spring         | 56 | Filter-coin type   | 79 | O-ring                |
| 38 | Poppet                | 62 | Poppet-negative    | 82 | O-ring                |
| 39 | Seat-poppet           | 63 | Filter-coin type   | 84 | O-ring                |
| 40 | Piston                | 64 | Holder-spring      | 85 | O-ring                |
| 41 | Guide-piston          | 65 | Spring-negative    | 87 | Back-up ring          |
| 42 | Spring-lock valve     | 66 | Piston-negative    | 89 | Back-up ring          |
| 43 | Piston                | 67 | Socket-negative    | 94 | Relief valve-main     |
| 44 | Socket-lock valve     | 68 | Plug               | 95 | Bolt-socket head      |
| 45 | Spool-lock valve      | 69 | Plug               | 96 | Relief valve-overload |
| 46 | Spring-lock valve     | 71 | Plug               | 97 | Plug-relief valve     |
| 47 | Plug-lock valve       | 73 | Plug               | 98 | Plug-relief valve     |
|    |                       |    |                    | 99 | Relief valve-overload |

### 3. DISASSEMBLY AND ASSEMBLY

#### 1) GENERAL PRECAUTIONS

- (1) All hydraulic components are manufactured to a high precision. Consequently, before disassembling and assembling them, it is essential to select an especially clean place.
- (2) In handling a control valve, pay full attention to prevent dust, sand, etc. from entering into it.
- (3) When a control valve is to be removed from the machine, apply caps and masking seals to all ports. Before disassembling the valve, recheck that these caps and masking seals are fitted completely, and then clean the outside of the assembly. Use a proper bench for working. Spread paper or a rubber mat on the bench, and disassemble the valve on it.
- (4) Support the body section carefully when carrying or transferring the control valve. Do not lift by the exposed spool, end cover section etc.
- (5) After disassembling and assembling of the component it is desired to carry out various tests (For the relief characteristics, leakage, flow resistance, etc.), but hydraulic test equipment is necessary for these tests. Therefore, even when its disassembling can be carried out technically, do not disassemble such components that cannot be tested, adjusted, and so on. Additionally one should always prepare clean cleaning oil, hydraulic oil, grease, etc. beforehand.

#### 2) TOOLS

Before disassembling the control valve, prepare the following tools beforehand.

Name of tool	Quantity	Size(mm)
Vice mounted on bench(Soft jaws)	1 unit	
Hexagon wrench	Each 1 piece	5, 6, 10, 12 and 14
Socket wrench	Each 1 piece	27 and 32
Spanner	Each 1 piece	32(Main relief valve)

### 3) DISASSEMBLY

#### (1) Disassembly of spools without holding valve

Loosen hexagon socket head bolts with washer  
(Hexagon wrench : 5mm)

Remove the pilot cover.

Pay attention not to lose the O-ring under the pilot cover.

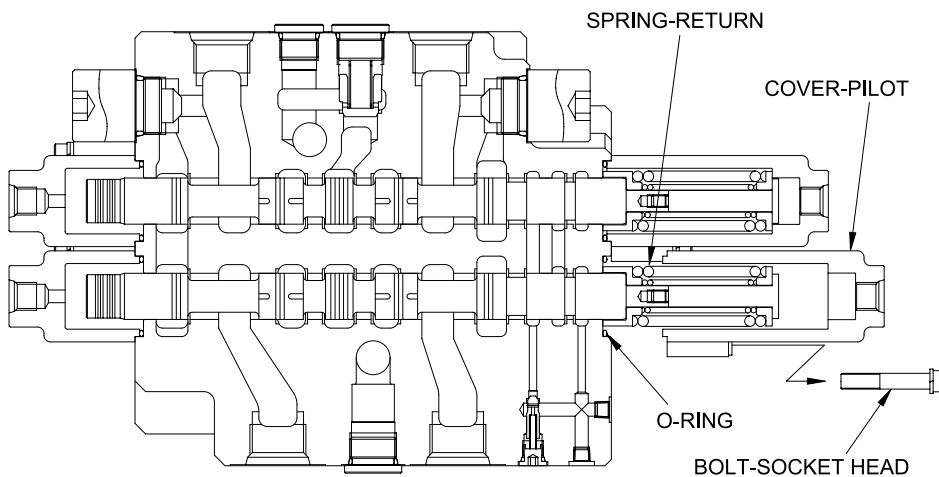
Remove the spool assembly from the body by hand slightly.

When extracting each spool from its body, pay attention not to damage the body.

When extracting each spool assembly, it must be extracted from spring side only.

When any abnormal parts are found, replace it with completely new spool assembly.

When disassembled, tag the components for identification so that they can be reassembled correctly.



**(2) Disassembly of spools with holding valve(Boom 1, Arm 1 spool)**

Loosen hexagon socket head bolts with washer  
(Hexagon wrench : 5mm)

Remove the pilot cover with internal parts.

Pay attention not to lose the O-ring and the poppet under the pilot cover.  
Pay attention not to damage the "piston A" under pilot cover.

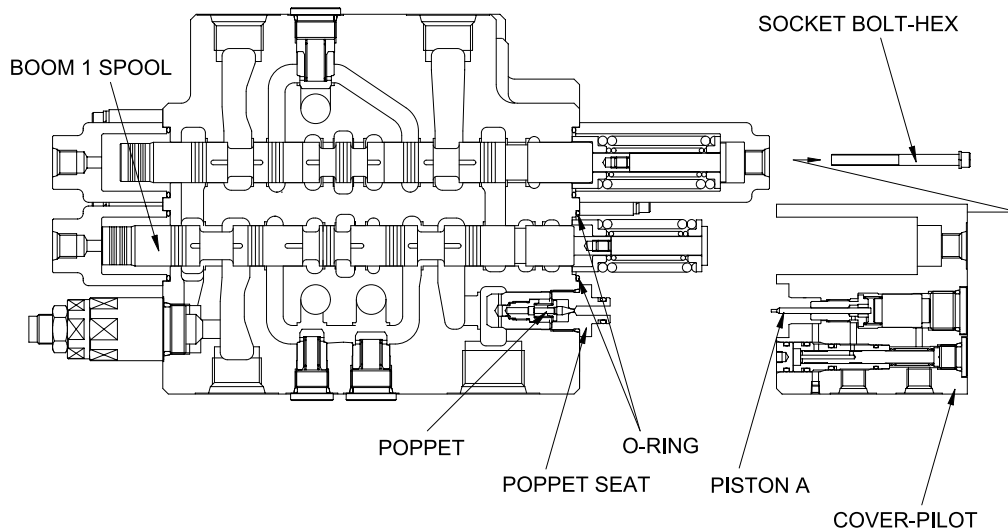
Remove the spool assembly from the body by hand slightly.

When extracting each spool from its body, pay attention not to damage the body.

When extracting each spool assembly, it must be extracted from spring side only.

When any abnormal parts are found, replace it with completely new spool assembly.

When disassembled, tag the components for identification so that they can be reassembled correctly.



### (3) Disassembly of the holding valve

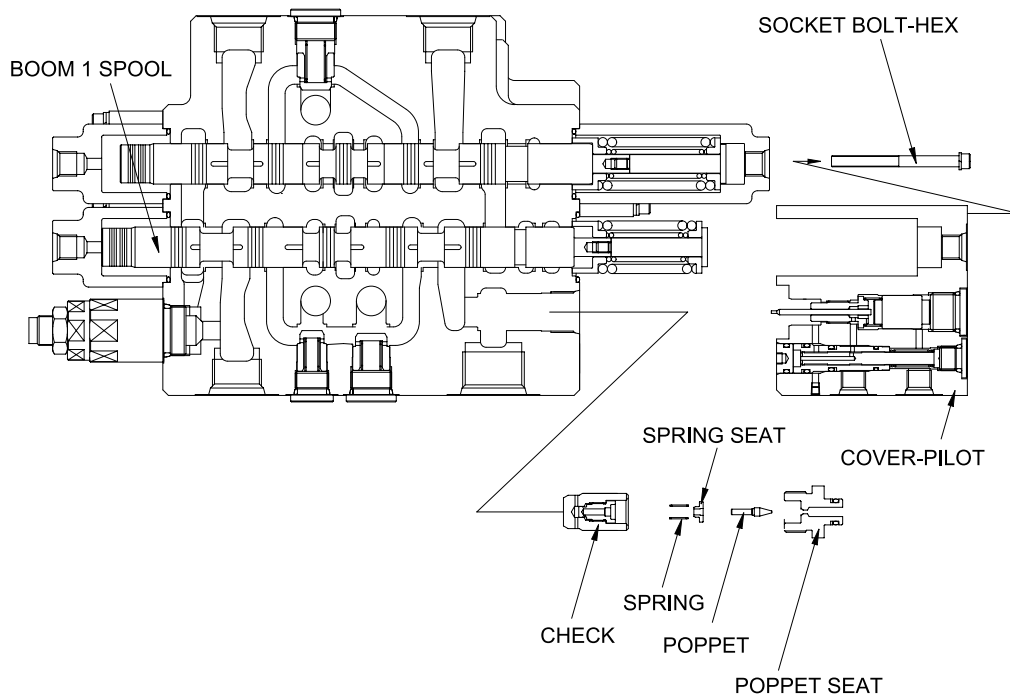
Remove the pilot cover with the holding valve as discribed on previous page.

Do not disassembled internal parts of the pilot cover.

Loosen the poppet seat and remove the poppet, the spring seat, the spring and the check.  
(Spanner : 32mm)

Pay attention not to lose the poppet.

Do not disassembled internal parts of the check.



#### (4) Disassembly of the load check valve and the negative relief valve

##### The load check valve

a. Fix the body to suitable work bench.

Pay attention not to damage the body.

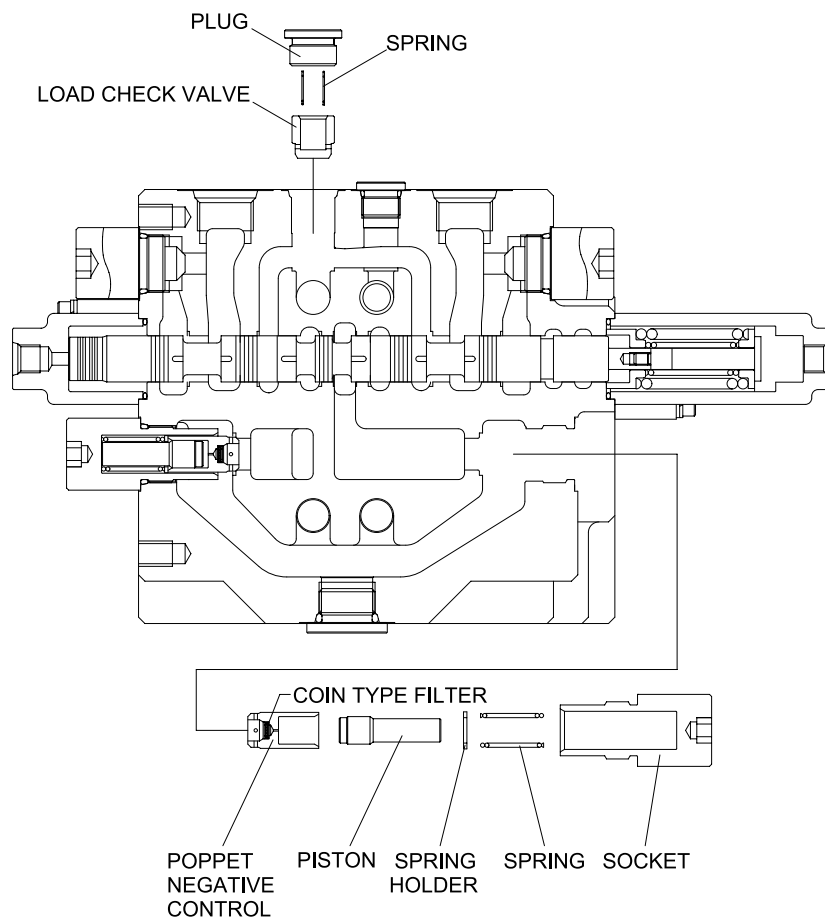
b. Loosen the plug (Hexagon wrench : 10mm).

c. Remove the spring and the load check valve with pincers or magnet.

##### The negative relief valve

a. Loosen the socket (Hexagon wrench : 12mm).

b. Remove the spring, the spring holder, the piston and the negative control poppet.



## (5) Disassembly of the main and overload relief valve

Fix the body to suitable work bench.

Remove the main relief valve.

(Spanner : 32mm)

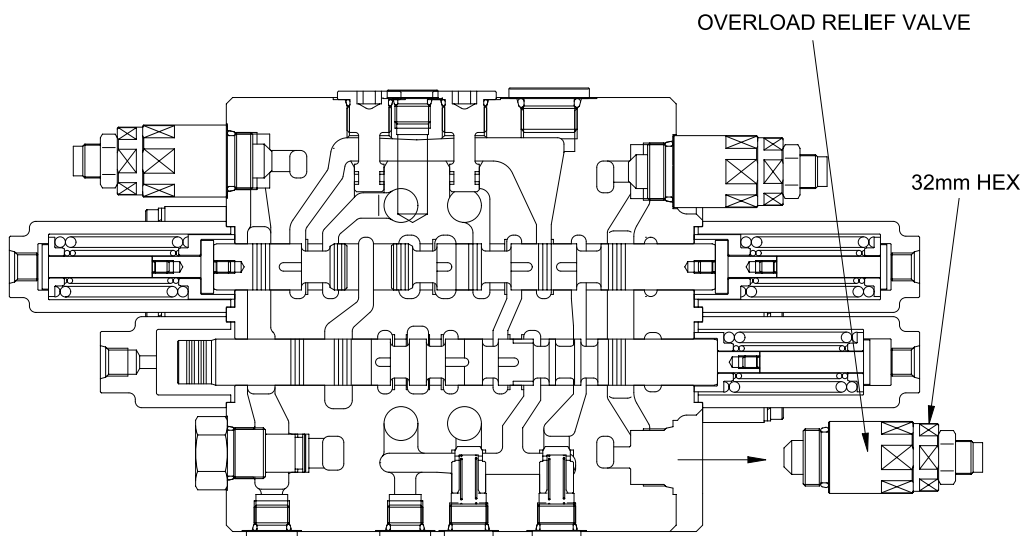
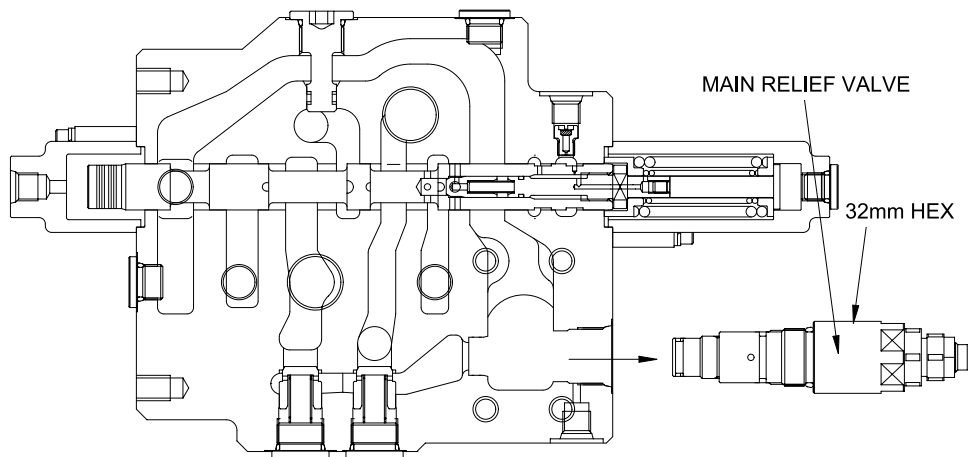
Remove the overload relief valve.

(Spanner : 32mm)

When disassembled, tag the relief valve for identification so that they can be reassembled correctly.

Pay attention not to damage seat face.

When any abnormal parts are found, replace it with completely new relief valve assembly.



**(6) Inspection after disassembly**

Clean all disassembled parts with clean mineral oil fully, and dry them with compressed air. Then, place them on clean papers or cloths for inspection.

**Control valve**

- a. Check whole surfaces of all parts for burrs, scratches, notches and other defects.
- b. Confirm that seal groove faces of body and block are smooth and free of dust, dent, rust etc.
- c. Correct dents and damages and check seat faces within the body, if any, by lapping.  
Pay careful attention not to leave any lapping agent within the body.
- d. Confirm that all sliding and fitting parts can be moved manually and that all grooves and paths are free foreign matter.
- e. If any spring is broken or deformed, replace it with new one.
- f. When a relief valve does not function properly, repair it, following it's the prescribed disassembly and assembly procedures.
- g. Replace all seals and O-rings with new ones.

**Relief valve**

- a. Confirm that all seat faces at ends of all poppets and seats are free of defects and show uniform and consistent contact faces.
- b. Confirm manually that main poppet and seat can slide lightly and smoothly.
- c. Confirm that outside face of main poppet and inside face of seat are free from scratches and so on.
- d. Confirm that springs are free from breakage, deformation, and wear.
- e. Confirm that orifices of main poppet and seat section are not clogged with foreign matter.
- f. Replace all O-rings with new ones.
- g. When any light damage is found in above inspections, correct it by lapping.
- h. When any abnormal part is found, replace it with a completely new relief valve assembly.

## 4) ASSEMBLY

### (1) General precaution

In this assembly section, explanation only is shown.

For further understanding, please refer to the figures shown in the previous structure & disassembly section.

Pay close attention to keeping all seals free from handling damage and inspect carefully for damage before using them.

Apply clean grease or hydraulic oil to the seal so as to ensure it is fully lubricated before assembly.

Do not stretch seals so much as to deform them permanently.

In fitting O-rings, pay close attention not to roll them into their final position in addition, a twisted O-ring cannot easily untwist itself naturally and could thereby cause inadequate sealing and thereby both internal and external oil leakage.

Tighten fitting bolts for all sections with a torque wrench adjusted to the respective tightening torque.

Do not reuse removed O-rings and seals.

### (2) Load check valve

Assemble the load check valve and spring.

Put O-rings on to plug.

Tighten plug to the specified torque.

- Hexagon wrench : 10mm
- Tightening torque : 6~7kgf · m(43.4~50.6lbf · ft)

### (3) Negative control relief valve

Assemble the nega-con poppet, piston, spring holder and spring together into body.

Put O-ring on to plug and tighten the latter to its specified torque.

- Hexagon wrench : 12mm
- Tightening torque : 8~9kgf · m(57.8~65.1lbf · ft)

### (4) Main relief, port relief valves

Install main relief valve, overload relief valve into the body and tighten to the specified torque.

Component	Tools	Tightening torque	
		kgf · m	lbf · ft
Main relief valve	Spanner 32mm	8~9	57.8~65.1
Overload relief valve	Spanner 32mm	8~9	57.8~65.1

### (5) Main spools

Carefully insert the previously assembled spool assemblies into their respective bores within of body.

Fit spool assemblies into body carefully and slowly. Do not under any circumstances push them forcibly in.

## **(6) Covers**

Fit spool covers to the non-spring assembly end of the spool, and tighten the hexagonal socket head bolts to the specified torque.

- Hexagon wrench : 5mm
- Tightening torque : 1~1.1kgf · m(7.2~7.9lbf · ft)

Confirm that O-rings have been fitted.

Fit spring covers to the spring end for the spools, and tighten hexagon socket head bolts to the specified torque.

- Hexagon wrench : 5mm
- Tightening torque : 1~1.1kgf · m(7.2~7.9lbf · ft)

Confirm that O-rings have been fitted.

## **(7) Holding valves**

Assemble the check, spring seat and poppet together into body.

Tighten the poppet seat to the specified torque.

- Spanner : 26mm
- Tightening torque : 6~7kgf · m(43.4~50.6lbf · ft)

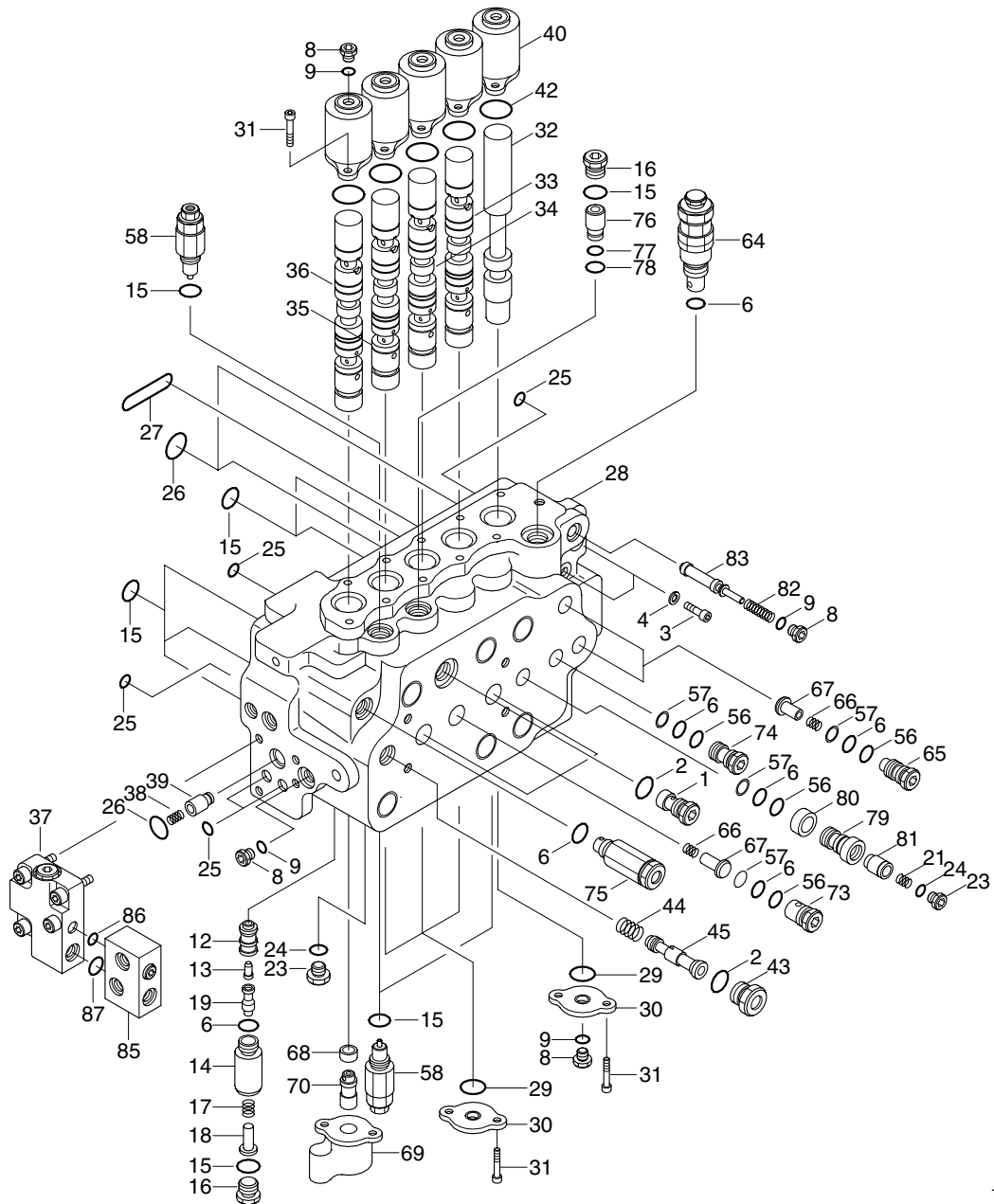
Fit the "piston A" under pilot cover with internal parts into hole on the poppet seat.

Tighten hexagon socket head bolt to specified torque.

- Hexagon wrench : 5mm
- Tightening torque : 1~1.1kgf · m(7.2~7.9lbf · ft)

## B. UHX22-26

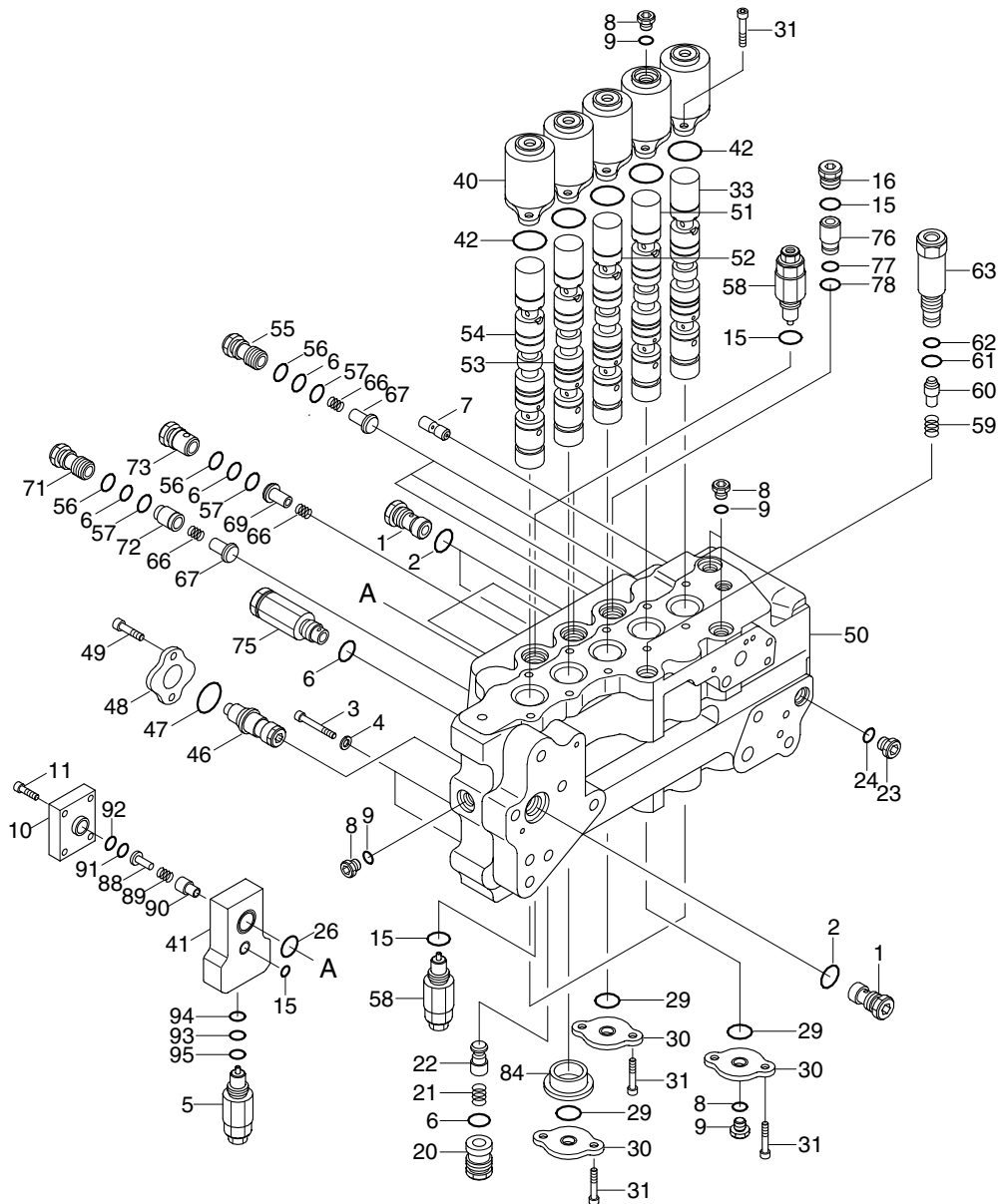
### 2. STRUCTURE(1/2)



16032MC01

1	Cap	14	Cap	27	O-ring
2	O-ring	15	O-ring	28	Housing
3	Socket bolt	16	Cap	29	O-ring
4	Spring washer	17	Spring	30	Retainer
5	Overload assy	18	Spring guide	31	Socket bolt
6	O-ring	19	Spring guide	32	Plunger assy(TS)
7	Orifice	20	Cap	33	Plunger assy(TL, TR)
8	Cap	21	Spring	34	Plunger assy(SW)
9	O-ring	22	Check	35	Plunger assy(BM2)
10	Cover	23	Cap	36	Plunger assy(AM1)
11	Socket bolt	24	O-ring	37	Cover assy
12	Sleeve	25	O-ring		
13	Check	26	O-ring		

# STRUCTURE(2/2)



16032MC02

38	Spring	53	Plunger assy(BM1)	68	Spacer	83	Spool
39	Poppet	54	Plunger assy(AM2)	69	Cover	84	Stopper
40	Cover	55	Cap	70	Piston	85	Selector assy
41	Manifold	56	Back up ring	71	Cap	86	O-ring
42	O-ring	57	Nylon chip	72	Check	87	O-ring
43	Cap	58	Overload assy	73	Cap	88	Spring guide
44	Spring	59	Spring	74	Cap	89	Spring
45	Spool	60	Check	75	Foot relief assy	90	Poppet
46	Plug	61	O-ring	76	Plug	91	O-ring
47	O-ring	62	Back up ring	77	Back up ring	92	Back up ring
48	Retainer	63	Cap	78	O-ring	93	O-ring
49	Socket bolt	64	Main relief assy	79	Cap	94	Back up ring
50	Housing	65	Cap	80	Spacer	95	O-ring
51	Plunger assy(OPT)	66	Spring	81	Check		
52	Plunger assy(BKT)	67	Check	82	Spring		

### 3. DISASSEMBLY AND ASSEMBLY

#### 1) PRECAUTION

##### (1) Disassembly

- ① Handle the components carefully not to drop them or bump them with each other as they are made with precision.
- ② Do not force the work by hitting or twisting as burred or damaged component may not be assembled or result in oil leaked or low performance.
- ③ When disassembled, tag the components for identification so that they can be reassembled correctly.
- ④ Once disassembled, O-rings and backup rings are usually not to be used again. (Remove them using a wire with its end made like a shoehorn. Be careful not to damaged the slot.)
- ⑤ If the components are left disassembled or half-disassembled, they may get rust from moisture or dust. If the work has to be interrupted, take measures to prevent rust and dust.

##### (2) Assembly

- ① Take the same precautions as for disassembly.
- ② When assembling the components, remove any metal chips or foreign objects and check them for any burrs or dents. Remove burrs and dents with oil-stone, if any.
- ③ O-rings and backup rings are to be replaced with new ones, as a rule.
- ④ When installing O-rings and backup rings, be careful not to damage them. (Apply a little amount of grease for smoothness.)
- ⑤ Tighten the bolts and caps with specified torque.(See **Disassembly/Assembly**.)

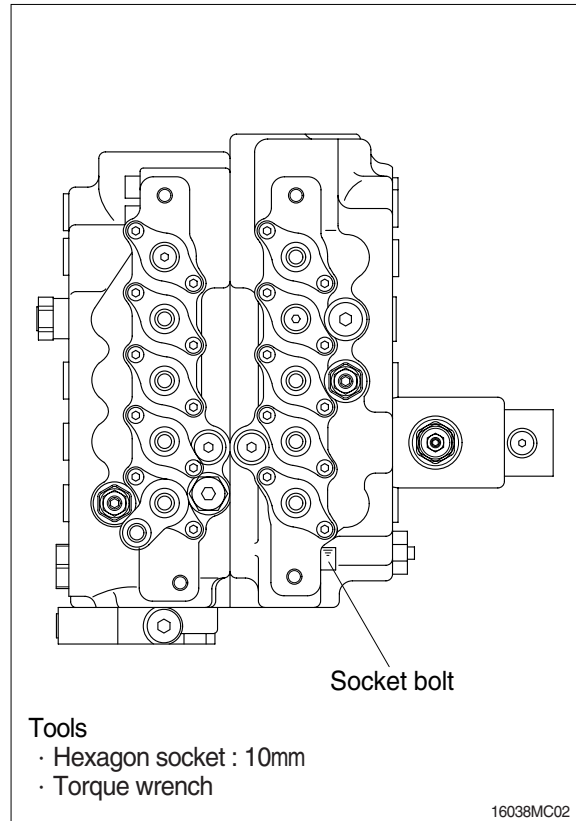
## 2) MOUNTING AND DISMOUNTING VALVES

### (1) Disassembly

- ① Remove socket bolts and separate 4 spool valve and 5 spool valve.

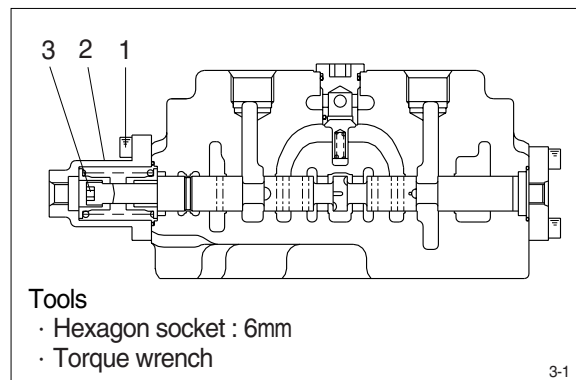
### (2) Assembly

- ※ Valves should be mounted after making sure that all O-rings and caps are placed on the assembling faces of 4 plunger valve.
- ① Carry out assembly in the reverse manner of disassembly.
  - ② Tighten the bolts to the specified torque.
    - Tightening torque : 10kgf · m  
(72.3lbf · ft)

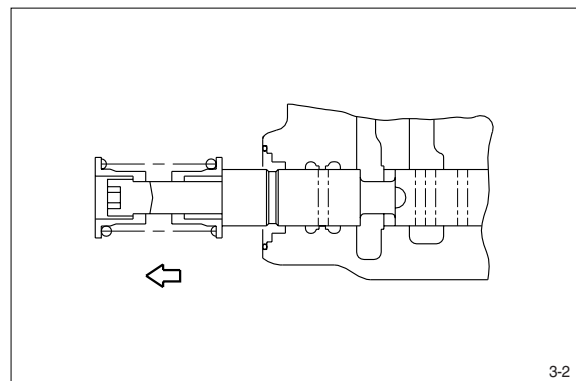


## 3) PLUNGER

- (1) Loosen socket bolt(1) and remove cover (2).
  - Tightening torque : 3kgf · m(21.7lbf · ft)
- ※ Install cover (2) after making sure that O-ring is placed on the edge of the valve hole.



- (2) Pull the plunger out while holding the spring.
  - ※ Do not pull it out violently, but draw it out gently while making sure of its contact with housing hole.

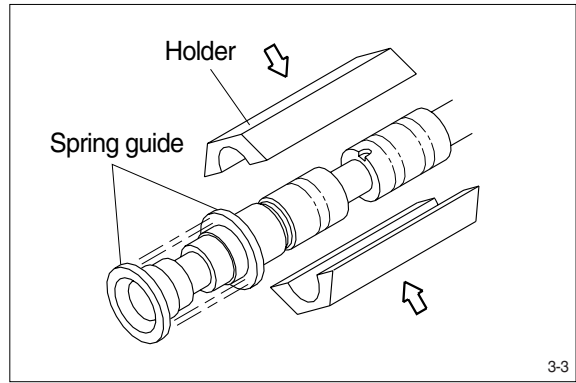


(3) Place the plunger between holders and loosen plunger cap(3) by using a vise.

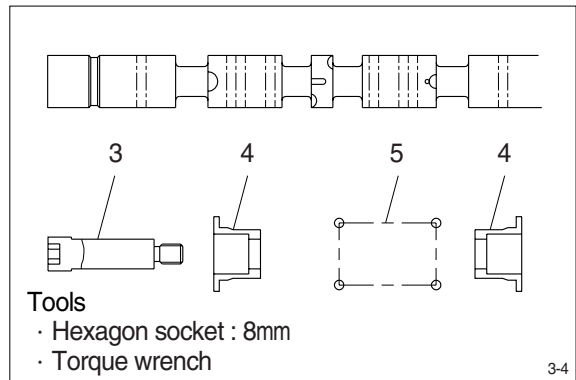
- Plunger cap

Hexagon socket : 8mm

Tightening torque : 6kgf · m(43.4lbf · ft)



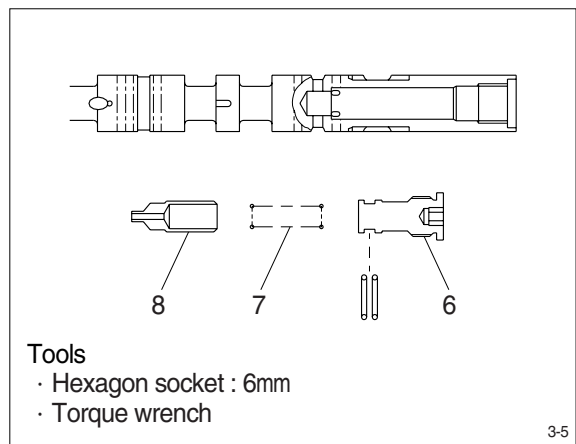
(4) Remove plunger cap(3), spring guide(4) and spring(5) in this order.



(5) Arm plunger only (Remove check).

Remove cap(6) and disassemble spring (7) and check(8).

- Tightening torque : 3kgf · m(21.7lbf · ft)

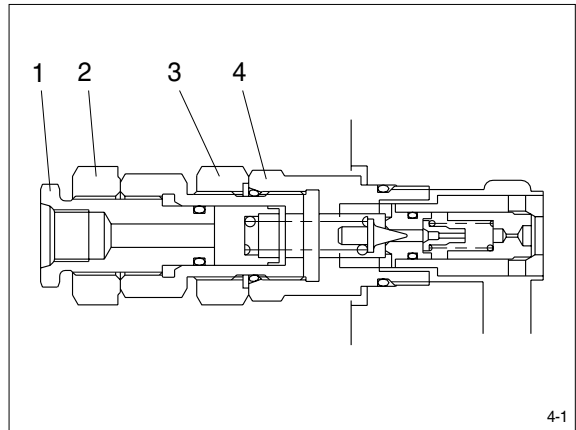


#### 4) MAIN RELIEF ASSEMBLY

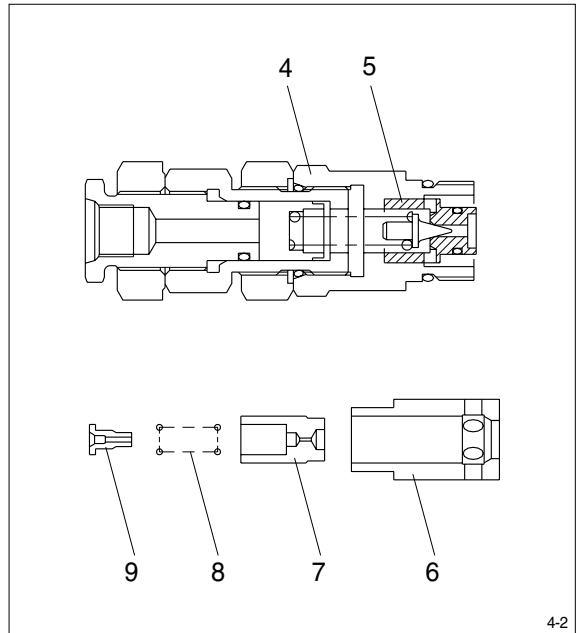
Relief assy is assembled into a single block as a cartridge. Do not disassemble the relief assembly as a rule.

- (1) Loosen the hexagon nut(2) with a holding adjust screw(1).
  - (2) Loosen the hexagon nut(3) with a holding cap(4)
  - (3) Loosen the cap(4) and remove the cartridge.
  - (4) Pull out the sleeve(6) and take off the main poppet(7), spring(8) and orifice(9).
- ※ Can't remove the pilot seat(5) from the cap(4), because it was locked at the cap.
- (5) Loosen each screw and remove.

Item No.	Name	Socket
1	Adjust screw	22mm
2	Hexagon nut	30mm
3	Hexagon nut	30mm
4	Cap	30mm



4-1



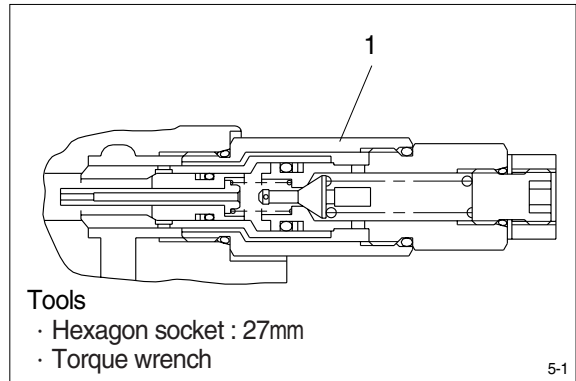
4-2

### 5) OVERLOAD RELIEF VALVE ASSEMBLY

Relief assembly is assembled into a single block as a cartridge. Do not disassemble the relief assembly as a rule.

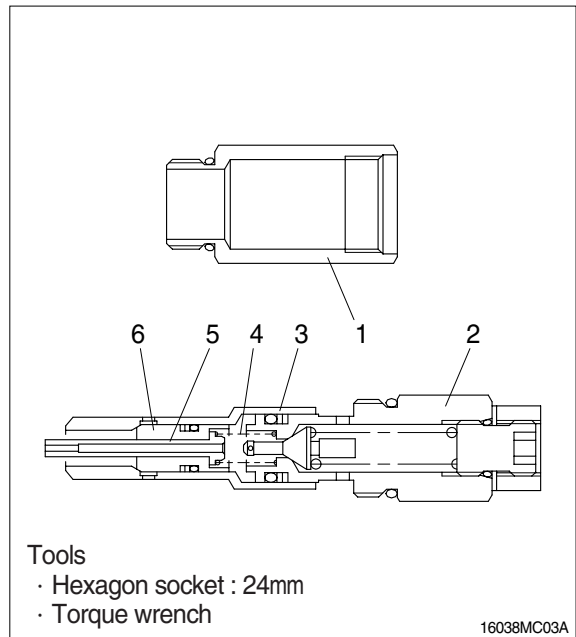
- (1) Loosen the relief sleeve (1) and remove the cartridge.

· Tightening torque : 4kgf · m(29lbf · ft)

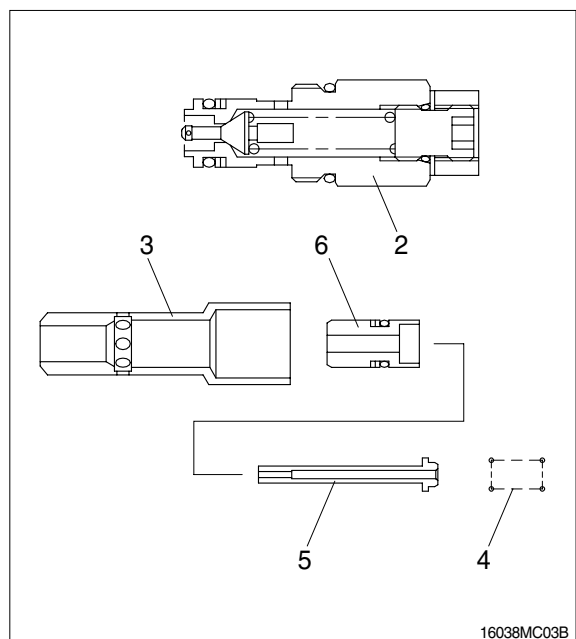


- (2) Loosen the relief seat (2) and remove the subassembly.

· Tightening torque : 6kgf · m(43.4lbf · ft)



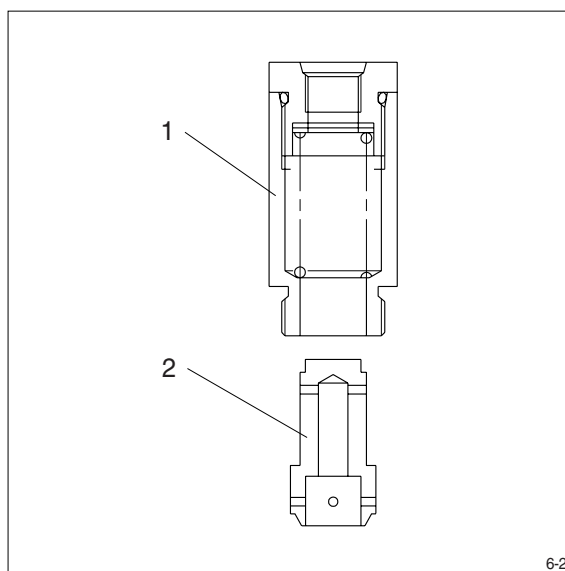
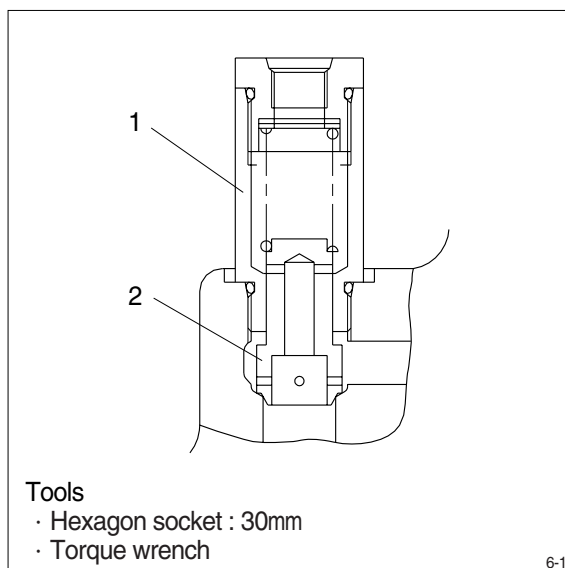
- (3) Pull out the poppet(3) and take off the spring(4), piston(5) and main poppet(6).



## 6) FOOT RELIEF ASSEMBLY

(1) Loosen cap(1) and remove poppet (2).

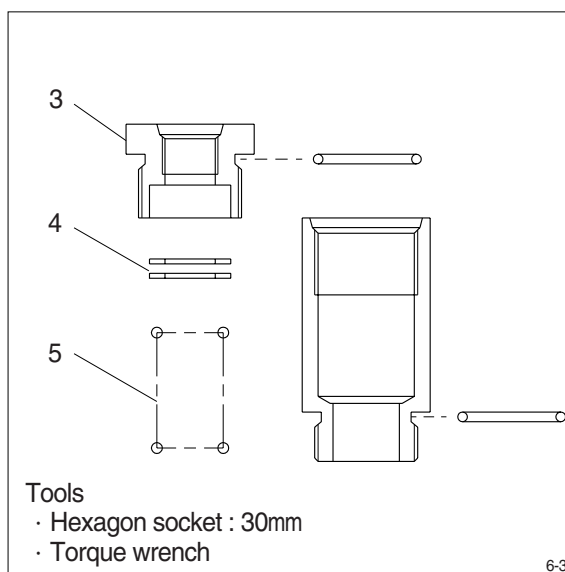
· Tightening torque : 6kgf · m(43.4lbf · ft)



(2) Remove cap (3) and take off shim (4) and spring (5).

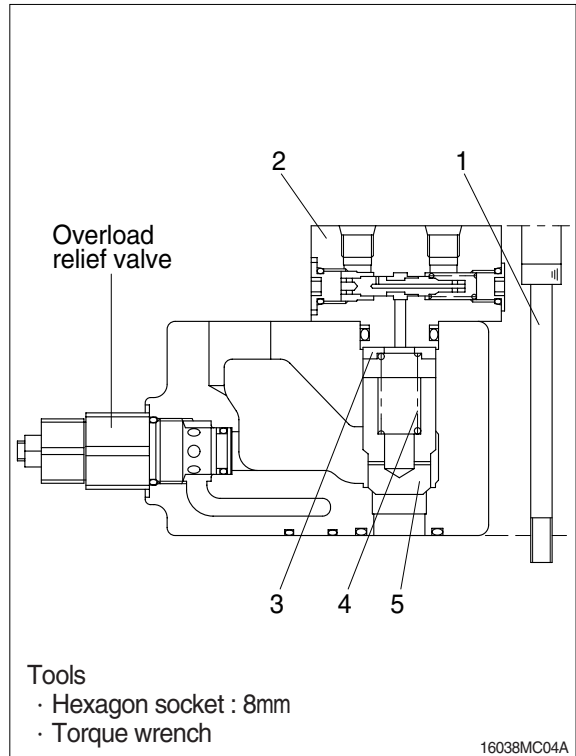
· Tightening torque : 6kgf · m(43.4lbf · ft)

※ Make sure adjust shim quantity.

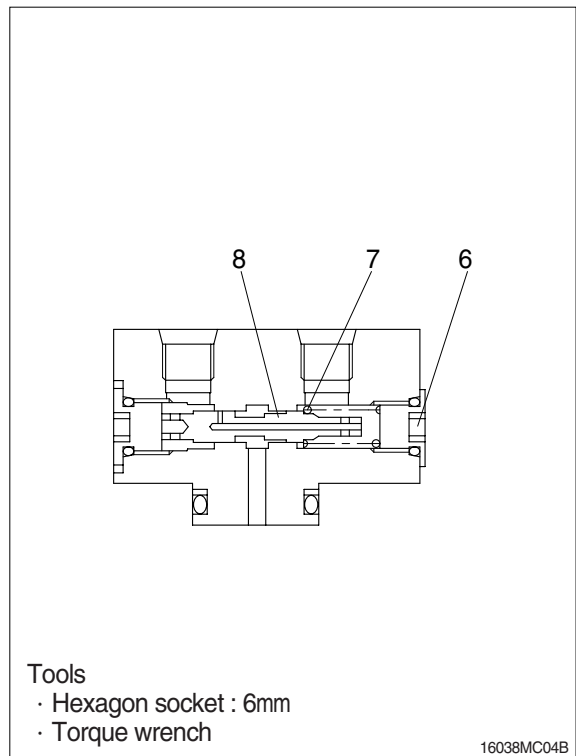


## 7) BOOM HOLDING VALVE ASSEMBLY

- (1) Loosen the socket bolt(1) and remove the cover assy(2).
  - Tightening torque : 5kgf · m(36.2lbf · ft)
- ※ Install cover assy(2) after making sure that O-ring is placed on the edge of the valve hole.
- (2) Remove the spring guide(3), spring(4) and poppet(5).



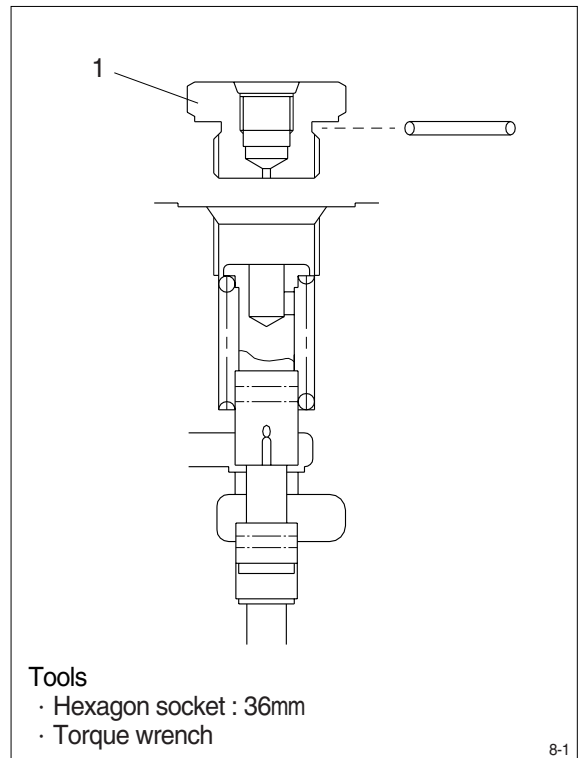
- (3) Remove the cap(6), spring(7) and spool(8).
- Tightening torque : 3kgf · m(21.7lbf · ft)



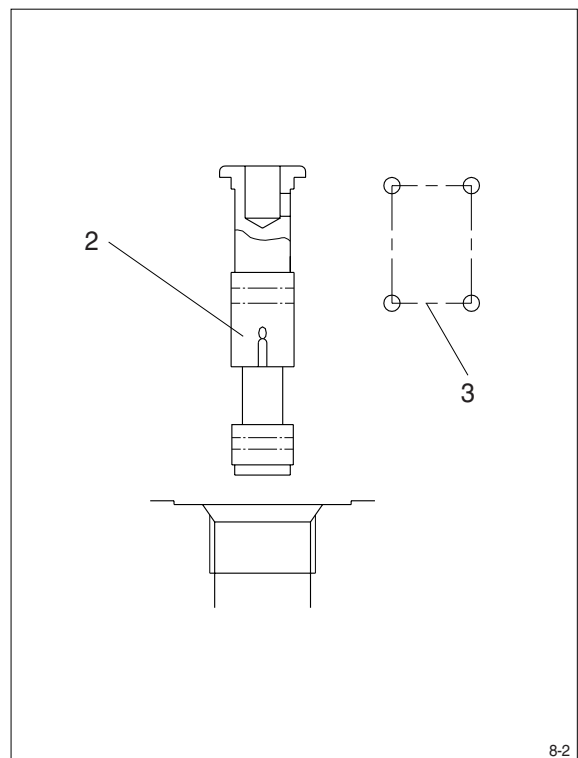
## 8) CENTER BYPASS VALVE ASSEMBLY

(1) Remove cap (1).

· Tightening torque : 8kgf · m(57.9lbf · ft)



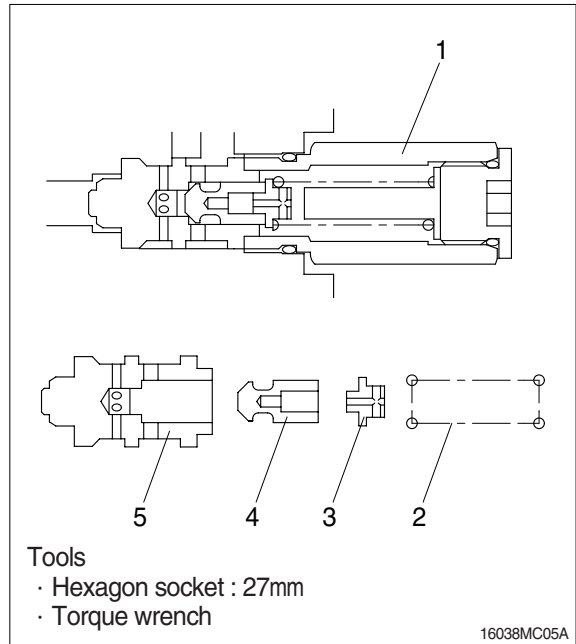
(2) Remove spool (2) and spring (3).



## 9) ARM REGENERATION VALVE

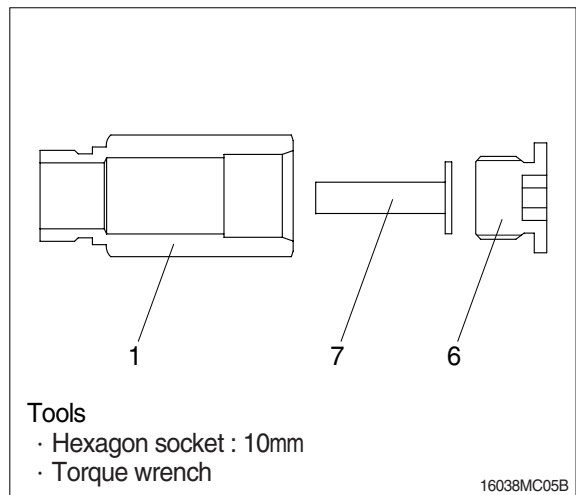
(1) Remove cap(1) and take off spring(2),  
spring guide(3), check(4) and sleeve(5).

· Tightening torque : 10kgf · m(72.3lbf · ft)



(2) Remove cap(6) and spring guide(7).

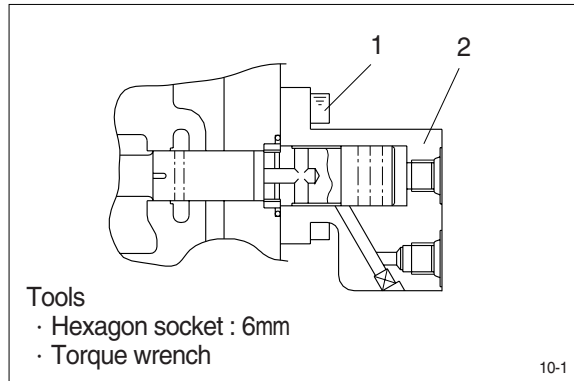
· Tightening torque : 6kgf · m(43.4lbf · ft)



## 10) ARM STROKE LIMIT ASSEMBLY

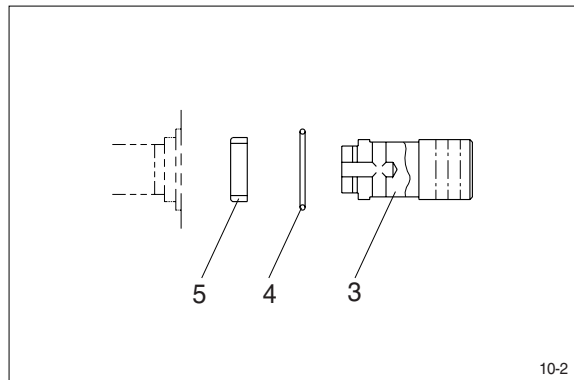
(1) Loosen the socket bolt(1) and remove cover(2).

- Tightening torque : 3kgf · m(21.7lbf · ft)



(2) Remove piston(3) and take off O-ring(4), spacer(5) from the valve hole.

- ※ Make sure inserting direction of the spacer.



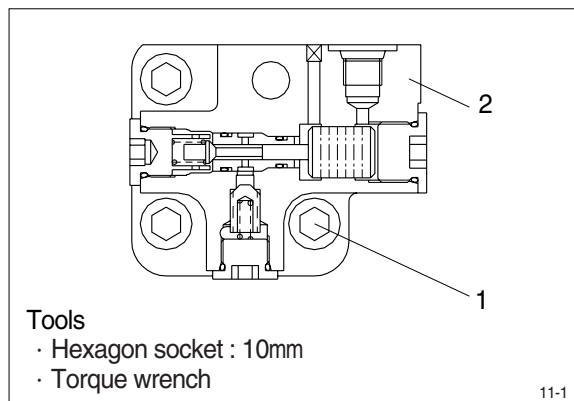
## 11) ARM LOAD HOLDING VALVE

### (1) Basic unit

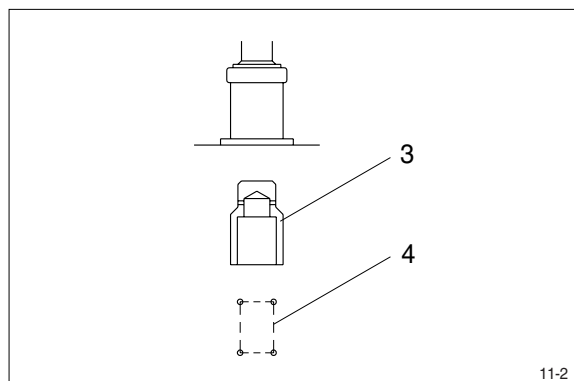
① Loosen socket bolt (1) and remove cover assembly (2).

- Tightening torque : 10kgf · m(72.3lbf · ft)

- ※ Install cover assembly (2) after making sure that O-ring is placed on the edge of the valve hole.

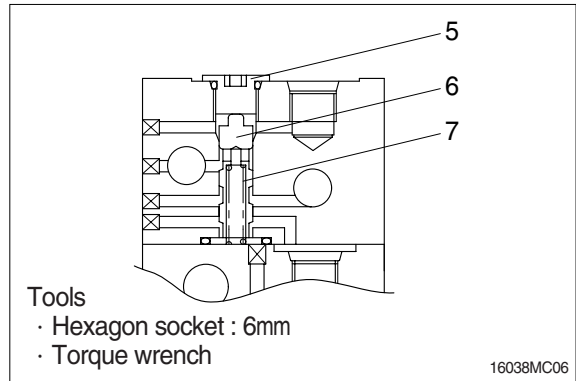


② Take off spring(3) and check valve(4).



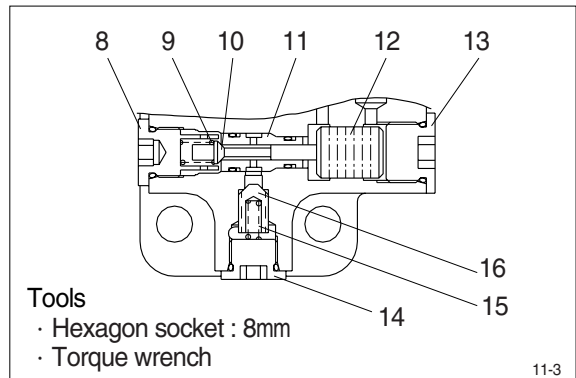
## (2) Selector unit

- ① Remove cap (5).  
Take off piston(6) and spring(7).  
· Tightening torque : 3kgf · m(21.7lbf · ft)

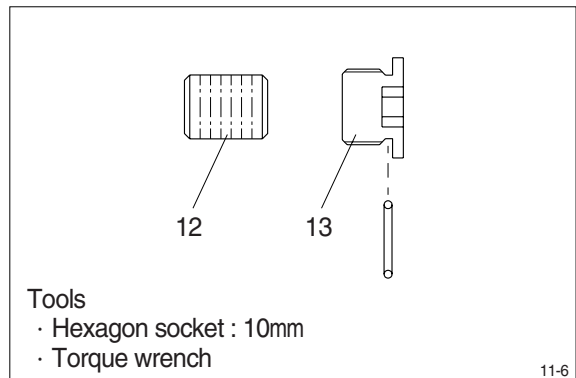


## (3) Cover assembly

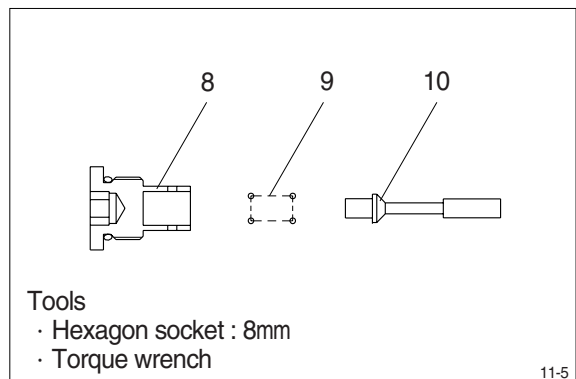
- ① Remove cap(14).  
Take off spring(15) and check valve(16).  
· Tightening torque : 5kgf · m(36.2lbf · ft)



- ② Remove cap (13) and take off piston (12).  
· Tightening torque : 6 kgf · m(43.4lbf · ft)
  - ③ Push sleeve (11) out with a rod or the like through the hole of cap (13).
- ※ Be careful not to damage the guideway (∅ 5) of the sleeve.



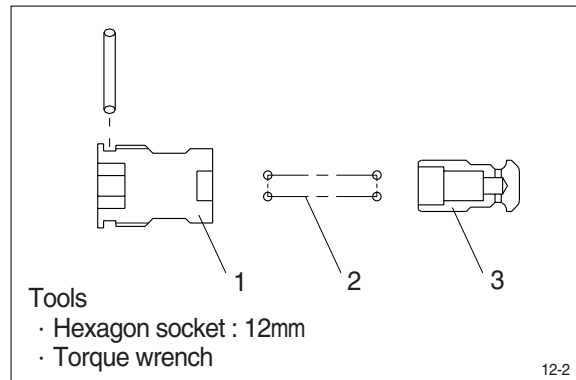
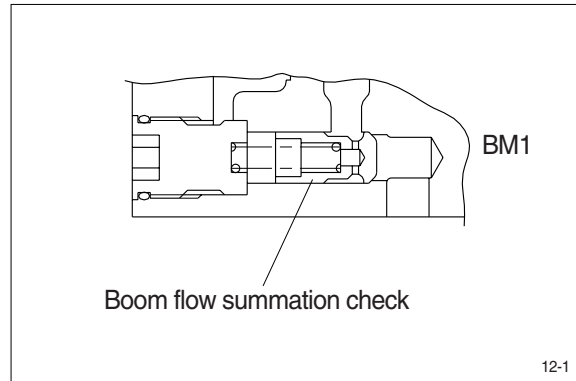
- ④ Remove cap (8).  
Take off spring (9) and poppet (10).  
· Tightening torque : 5kgf · m(36.2lbf · ft)



## 12) BOOM FLOW SUMMATION CHECK

(1) Remove the cap(1) and take off spring(2) and check(3).

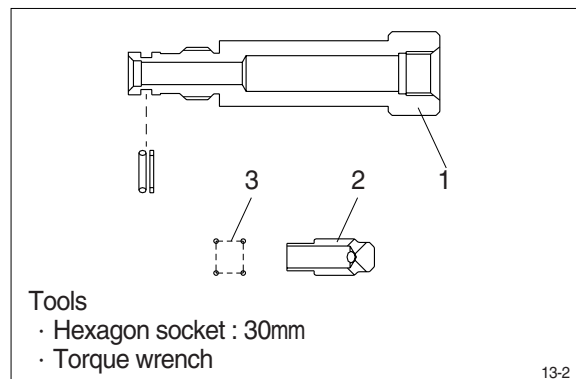
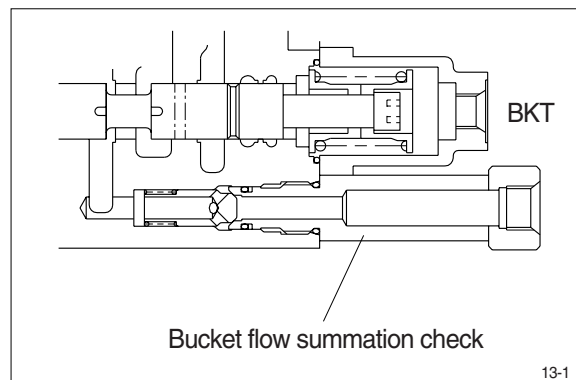
· Tightening torque : 10kgf · m(72.3lbf · ft)



## 13) BUCKET FLOW SUMMATION CHECK

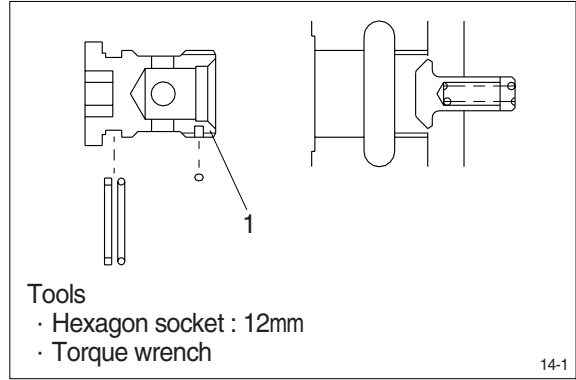
(1) Remove the cap(1) and take off check(2) and spring(3).

· Tightening torque : 6kgf · m(43.4lbf · ft)



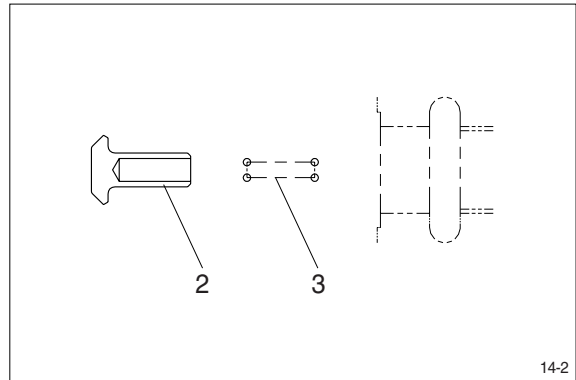
**14) CHECK ASSEMBLY(BOOM1, 2, BUCKET, OPT, SWING, ARM-1)**

(1) Remove cap(1).



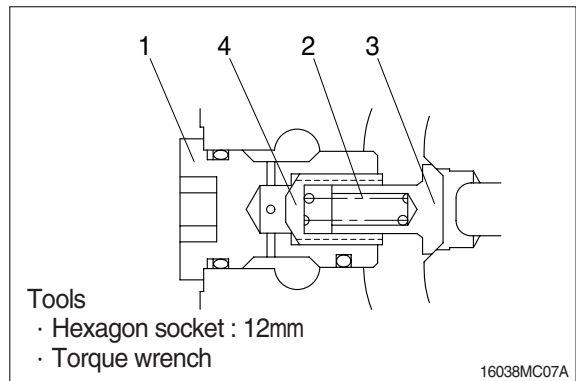
(2) Remove spring(2) and check(3).

· Tightening torque : 10kgf · m(72.3lb · ft)



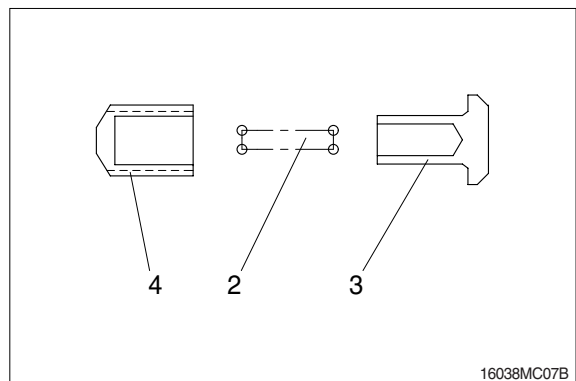
**15) CHECK ASSEMBLY(ARM 2)**

(1) Remove cap(1).



(2) Remove spring(2) and check(3, 4).

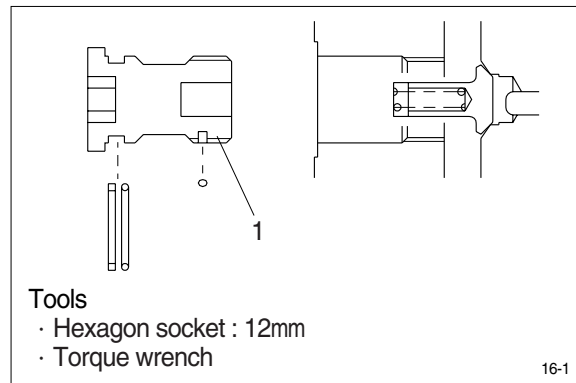
· Tightening torque : 10kgf · m(72.3lb · ft)



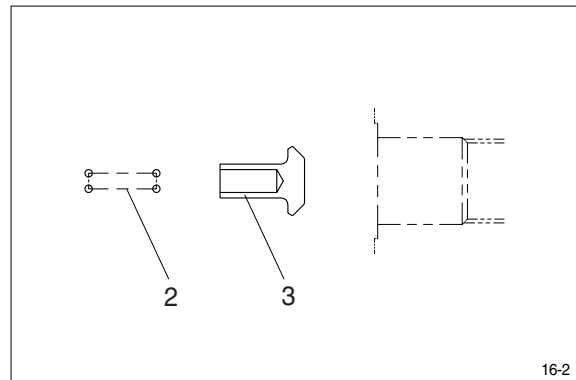
## 16) CHECK ASSEMBLY(TR)

(1) Remove cap(1).

· Tightening torque : 10kgf · m(72.3lbf · ft)



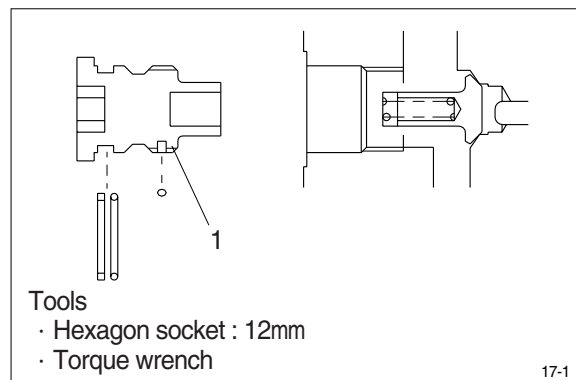
(2) Take off spring(2) and check(3).



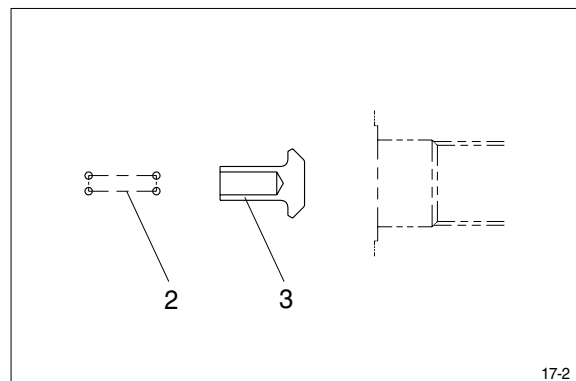
## 17) CHECK ASSEMBLY(P1)

(1) Remove cap(1).

· Tightening torque : 10kgf · m(72.3lbf · ft)

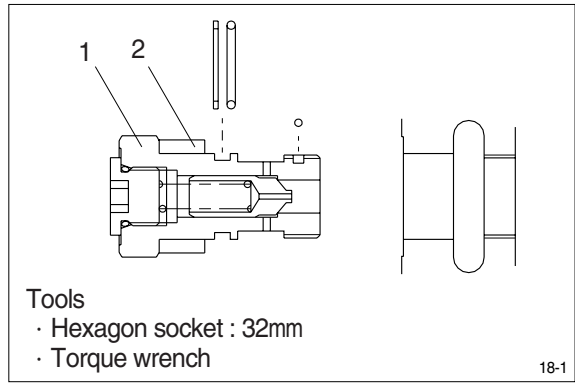


(2) Remove spring(2) and check(3).

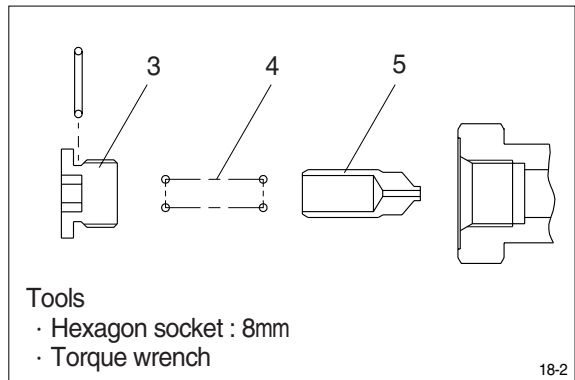


### 18) CHECK ASSEMBLY(TL)

- (1) Remove cap(1) and spacer(2).  
· Tightening torque : 10kgf · m(72.3lb · ft)



- (2) Remove cap(3) and take off spring(4) and check(5).  
· Tightening torque : 4kgf · m(29lb · ft)



### 19) SELECTOR VALVE ASSEMBLY

- (1) Remove cap(1) and take off spring(2) and spool(3).  
· Tightening torque : 3kgf · m(21.7lb · ft)

